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CLAIMS

What is claimed is

1. An analyser comprising:
a substrate of diamond, sapphire or a polymer material;
an array of one or more elongate capillary channels formed in the substrate;
means for driving a sample to be tested along one or more of the channels
whereby the velocities of components of the sample along the channels depends on
the relative molecular weights of those components;
a radiation source and a radiation detector disposed on either side of the
channel array so as to detect the presence of material in the channels as interruptions
in the radiation path between the radiation source and the radiation detector.
2. An analyser according to claim 1, in which the substrate is formed of diamond.
3. An analyser according to claim 1, in which the substrate is formed of sapphire having a coating of nanocrystalline diamond.
4. An analyser according to any one of claims 1 to 3, in which the channels are less than 250 μm deep.
5. An analyser according to claim 4, in which the channels are less than 150 μm deep.
6. ~~An analyser according to any one of the preceding claims, in which the channels are less than 200 μm wide.~~ IMPROPER
7. An analyser according to any one of the preceding claims, in which the channels are less than 100 μm wide.
8. An analyser according to any one of the preceding claims, in which the radiation source comprises an ultraviolet light source.

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9. An analyser according to claim 8, in which the ultraviolet light source is operable to generate ultraviolet light at a wavelength of about 260 nm or about 200 nm.

5 10. An analyser according to claim 8 or claim 9, in which focusing formations are formed on the substrate to at least partially focus the ultraviolet light onto the interior of each channel.

10 11. An analyser according to claim 10, in which the focusing formations, the channels and the radiation detector are arranged so that the interior of each channel is substantially mid-way between the focusing formations and the radiation detector.

15 12. An analyser according to any one of the preceding claims, in which the substrate of diamond, sapphire or a polymer is formed on a further substrate of a semiconductor material, the radiation detector being fabricated on the further substrate of semiconductor material.

20 13. An analyser according to claim 12, in which the semiconductor material is silicon.

25 14. An analyser according to claim 11 or claim 12, in which the radiation detector comprises an array of pixel detectors formed on the further substrate.

30 15. An analyser according to any one of claims 1 to 11, in which the radiation detector comprises an array of obscured regions on the substrate under the channels, and means for detecting an electric current formed by electron-hole pair generation at the obscured regions.

16. An analyser according to claim 15, in which the regions are formed at a lower surface of each channel.

17. An analyser according to claim 15, in which the regions are formed at a lower surface of the substrate substantially beneath each channel.

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